DEPARTMENT OF HEALTH & HUMAN SERVICES Public Health Service

Centers for Disease Control
and Prevention (CDC)
Atlanta GA 30333

TB Notes
No. 2, 2005

Dear Colleague:

CDC's annual EIS Conference was held April 11-15 here in Atlanta. Our division was well represented in sessions on tuberculosis investigations by our EIS officers Jawad Asghar, Kevin Cain, Alyssa Finlay, Sarita Shah, and John Oeltmann, as well as by Peter Vranken, an EIS officer assigned to the Louisiana Infectious Disease Epidemiology Section. Congratulations to all of you on a job well done! I also extend my thanks, on behalf of DTBE, to the local TB control and health department staff who played principal roles in the investigations being described. These collaborative investigations are an important component of the training process for EIS officers, and I acknowledge our indebtedness to these state and local public health professionals for their support.

A small group of DTBE staff members gave presentations at the 9th Annual International Union Against Tuberculosis and Lung Disease (IUATLD) North American Region Meeting that was held February 23-26, 2005, in Vancouver, BC, Canada. Another contingent of laboratory scientists from DTBE traveled to Canada April 2-7, 2005, to attend and present posters at the Keystone Symposia on Infectious Disease. The meeting, entitled "Tuberculosis: Integrating Host and Pathogen Biology," was an important conference for our colleagues in the Mycobacteriology Laboratory Branch.

Members of DTBE were invited to participate in a number of World TB Day events, and also marked the occasion with an in-house luncheon. Please see the articles in this issue about World TB Day activities in Atlanta and other cities.

The Seventh Semi-Annual Tuberculosis Epidemiologic Studies Consortium (TBESC) meeting was held at Corporate Square in Atlanta on May 4 and 5. Participants heard committee and Task Order updates, and split into breakout sessions for further discussions. Currently TBESC members are involved in 17 research projects with study periods ranging from 6 months to 5 years.

The 100th American Thoracic Society (ATS) International Conference took place in San Diego, California, May 20-25. I participated in a town hall meeting convened by Rep. Randy Cunningham and ATS President-elect Peter D. Wagner, MD. This meeting brought together government representatives from the United States and Mexico to discuss joint efforts in improving completion of TB treatment for persons who cross the US-Mexico border. The binational card and information exchange system relying on CureTB and TB*Net* and other groups were prominently featured. Several symposia and poster sessions provided opportunities to present research and program findings.

On Sunday, May 22, CDC hosted a TB public health poster session that featured 30 posters from across the country. As always, this informal poster session provided an opportunity to learn about new and ongoing activities, as well as an opportunity to see old and new friends and colleagues.

The TB Trials Consortium (TBTC) held its 17th semi-annual meeting prior to the ATS conference. The TBTC meeting was dedicated to Earl S. Hershfield, MD, of Manitoba, Canada, who will retire this year from the TBTC and from TB program work. The meeting was an exceptional one, for many reasons. One outstanding feature was the first presentation of the preliminary results of Study 27, which is evaluating the use of moxifloxacin and the effect of this promising new TB drug on accelerating the time to culture conversion for patients with smear-positive pulmonary TB. Moxifloxacin and other new drug compounds continue to be studied by the TBTC and by other research groups with the objective of making TB therapy easier for all.

The 2005 National TB Controllers Workshop is being held June 28–30 at the J.W. Marriott Lenox Hotel in Atlanta, Georgia. Our planning committee has already sent out the invitation letter, which includes registration and hotel information. We are strongly encouraging use of the secure, online website for both conference and hotel registration; this can be accessed at www.ntca-tb.org or www.cdc.gov/nchstp/tb. Questions should be directed to Ms. Carol Pozsik (678-503-0503) at NTCA or Sherry Brown (404-639-8989) at CDC.

Kenneth G. Castro, MD

In This Issue

Note: The use of trade names in this issue is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

TB Notes

Centers for Disease Control and Prevention
Atlanta, Georgia 30333

Division of TB Elimination ♦ National Center for HIV, STD, and TB Prevention

Number 2, 2005

HIGHLIGHTS FROM STATE AND LOCAL PROGRAMS

Ten Against TB Initiative

After discussions at the US-Mexico Border Health Association meeting in 1995, the state health officers from the ten US-Mexico border states decided that it was necessary to change the way border states work to manage their public health issues. The lack of a strong communication infrastructure throughout the entire region often caused fragmentation in efforts to coordinate public health activities. The health officers agreed to begin the process of developing a system whereby states would communicate across border jurisdictional lines and build the linkages necessary to expedite interventions when public health events occurred.

Tuberculosis was identified as a public health condition common to all ten border states that would serve as an excellent public health issue around which to begin building a framework for cross-state and cross-border communication links. The ten state health officers were joined by representatives from both US and Mexican federal governments, and nongovernmental organizations including the Pan American Health Organization (PAHO), the American Lung Association, the Texas Medical Association, Rotary International, and the Migrant Clinicians Network.

For the past 10 years, the Ten Against TB Initiative has used limited funding from the U.S. Health Resources and Services Administration to host meetings. It carried out various operational aspects of the initiative with some fiscal support from the Texas Medical Association and the Pan American Health Organization. Since the inception of the initiative in 1995, the Texas Department of State Health Services has supported the personnel costs associated with its coordination and administration.

The Ten Against TB Initiative recently produced a strategic plan for the prevention and control of TB along the US-Mexico Border. The Ten Against TB Initiative Strategic Plan describes action steps to (1) enhance TB epidemiology, surveillance, and case finding; (2) strengthen laboratory infrastructure to enhance identification and confirmation of TB; (3) increase health promotion, training, and communication for TB awareness; and (4) improve TB case management.

The US-Mexico Border Health Commission recently selected the Ten Against TB Initiative as its official advisor on binational and border TB issues.

For additional information on the Ten Against TB Initiative, please contact the coordinator, Jose A. Gomes Moreira, at (512) 458-7447.

—Reported by Jose A Gomes-Moreira, MA, Coordinator
Ten Against TB Initiative
Phyllis Cruise, CDC Senior PHA, and
Charles E. Wallace, PhD, MPH, Manager
Infectious Disease Intervention and Control Branch
Texas Department of State Health Services

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(http://www.cdc.gov/nchstp/tb/)
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Rotary International Confronts TB on the Texas-Mexico Border

Rotary International is a worldwide organization of business, government, and professional leaders who provide humanitarian services, encourage high ethical standards in all vocations, and help build good will and peace in the world. Approximately 1.2 million Rotarians belong to more than 31,000 Rotary Clubs located in 166 countries.

Several Rotary districts in Texas and Mexico have joined in the fight against TB on the Texas-Mexico border. Texas Rotary Districts 5520, 5790, 5810, 5840, 5870, and 5930 and Mexican Rotary Districts 4110 and 4130 have come together to develop the Rotary Strategic Plan Against Tuberculosis on the Texas-Mexico Border. Three Rotary officials have been working with the Texas Department of State Health Service Tuberculosis Program to initiate the campaign against TB on the border: Dr. Clift Price, past Rotary District Governor and retired Associate Commissioner of the Texas Department of Health; Mr. Armando Avalos, President of the Corpus Christi, Texas, Sunrise Rotary Club and a charter member of the Ten Against TB Initiative; and Ms. Elaine Hernandez, Rotarian and Director of the Office of Border Health for the Lower Rio Grande Development Council. The campaign began with Rotary International establishing a Proclamation stating that the Rotary International Border districts on the Texas-Mexico Border are committed to making a difference in the prevention and control of TB in this sector of the two nations.

In McAllen, Texas, on October 2004, the Rotary International Border districts held the Rotary Binational TB Submit. The purpose of the Summit was to (1) raise awareness among Rotarians on the causes of TB along the border, (2) encourage Rotary Clubs to adopt TB projects, (3) demonstrate to the official health departments of Texas and of Tamaulipas and Nuevo Leon in Mexico that civic organizations can partner with governments to address public health concerns, and (4) strengthen relationships among Rotarians from districts in Texas and Mexico to work together on TB projects. This Rotary Campaign against Binational TB has been endorsed by two past presidents of Rotary International, Dr. Carlos Conseco and Mr. Frank Delvin, who are well known leaders in the International Polio Plus Campaign.

The Rotary Binational TB Summit had the support of the Honorable Luis Manuel Lopez Moreno, Consul of Mexico; Dr. Gerardo Garcia Salinas, Secretary of Health for the State of Tamaulipas, Mexico; Ms. Eva Moya, Executive Director of the US-Mexico Border Health Commission; and Dr. Adrian Rendon, Director of the Center of Excellence in Tuberculosis, Monterrey, Mexico. Also represented were Mr. Bill Martin, President of the McAllen Rotary Club; Rev. George Dawson, Governor of Rotary District 5930; Mr. Jose Verduzco, Governor-Elect

for Rotary District 5930, and Mr. Polo Rodriguez, Past District Governor of Rotary District 4130. The Summit received greetings from Congressman Ruben Hinojosa of Texas and a host of other state and national leaders.

For additional information on the Rotary International Binational Tuberculosis Campaign, contact Dr. Charles Wallace at Charles.Wallace@dshs.state.tx.us

—Submitted by Charles Wallace, PhD, MPH, Manager
Infectious Disease Intervention and Control Branch
Texas Department of State Health Services, and
Jose A. Gomes-Moreira, MA, Coordinator
Ten Against TB Initiative

Misdiagnosis in Rural Colorado

Background. Colorado is a low-incidence state, with a 2004 tuberculosis (TB) case rate of 2.8 per 100,000 population. However, the number of reported cases increased from 111 cases in 2003 to 127 in 2004. The Denver metro area typically reports 70% to 75% of the state's active TB cases each year. Though the metro area accounts for most of the cases, misdiagnosis still occurs if physicians do not "think TB" or if they have never seen a TB case before. In 2004 three rural counties in Colorado reported at least one active case of TB for the first time in at least 8 years. These counties have few health care facilities available and no TB expertise locally.

Case Report. On April 29, 2004, the Colorado Department of Public Health and Environment TB Program (CDPHE) received a call from an infectious disease (ID) physician in Denver. The physician was very concerned after diagnosing TB in a patient referred to her from a rural community clinic. This patient had sought care repeatedly and was misdiagnosed over a 4-month period of time. A discussion with the physician ensued regarding the consequences of the loss of TB diagnostic expertise in low-incidence areas such as Colorado, but especially in rural communities.

The patient was a 35-year-old female who had traveled to the United States from Uganda with an 18-month worker's visa. She arrived in a rural county in the Rocky Mountains of Colorado in December 2003. Her employer's international office actively recruits employees from around the world, including many from countries with a high incidence of TB. No health screening or tuberculin testing is required upon employment.

The patient sought care with the community clinic 11 times from December 2003 through April 2004. The clinician at this rural community clinic treated the patient repeatedly for pneumonia. The patient received several rounds of antibiotics and inhalers before being referred to the ID physician in Denver. The patient's symptoms included cough, chest pain, weight loss, and fever. The patient states her symptoms started approximately 1 week after arrival in Colorado, although she did not feel well on the flight over. Chest x-rays of December 2003 and March 2004 showed left upper and lower lobe infiltrates. The chest x-ray of April 2004 exhibited worsening infiltrates with cavitation. The patient had a history of a negative HIV test in 1998.

The ID physician immediately hospitalized the patient in Denver after her evaluation. Sputa collected were reported as 4+ on smear and four-drug therapy with INH, rifampin, ethambutol, and PZA was initiated. The rural county nursing service was contacted and the suspected TB case was reported to the nursing director and the public health nurse on April 29, 2004. The public health nurse, though experienced in nursing, was new to public health and had just finished her tenth day on the job. This rural county had not reported an active case of TB in over 10 years.

The CDPHE TB program nurse consultant immediately provided the community clinic staff with an educational inservice training; information included TB diagnosis and treatment and the contact investigation process. TB educational materials, including the CDC tuberculin skin

testing video, guidelines for the treatment of TB, and the Colorado State TB Manual, were distributed during this session. A county commissioner was noted among the audience. Discussions took place to answer questions and alleviate concerns. The TB program nurse consultant found that meeting with the community clinic staff was useful in the long and arduous process of contact investigation and case management of patients.

Many concerns and questions came from the private clinicians and public health staff, as well as the community. The CDPHE TB program nurse consultant made many trips to the county (a 200-mile round trip) to provide assistance and consultation. Building relationships improved the comfort level of the providers in the community to ask questions and follow recommendations. However, it was difficult for a low-incidence state such as Colorado to provide the assistance required to a small rural county and maintain all program functions.

The patient completed 6 months of directly observed therapy for culture-confirmed and drug-susceptible *Mycobacterium tuberculosis* on November 5, 2004. She exhibited severe joint and muscle pain at times while on treatment, although this did not interrupt her therapy. The patient was determined to complete her therapy regardless of side effects. The public health nurse offered encouragement to the patient and arranged appointments with the patient's private care provider for evaluation of symptoms and follow-up. As treatment continued, the patient regained 20 pounds of her weight loss and other TB symptoms resolved. She was extremely thankful for the treatment and care she received from the public health nursing service. She refused HIV testing though it was offered several times. Her reasoning was that she could not handle any additional bad news and would refuse treatment even if the test proved positive. The patient recounted knowing others who had died of HIV/AIDS in Uganda.

Contact Investigation. Owing to the length of time the case was misdiagnosed and to the patient's work and living environment, an extensive contact investigation was performed. It quickly became apparent that the patient had become very involved in the community since her arrival. The investigation included the work site, on-site housing, work site day care, high-risk patients from the clinic waiting room, the patient's church, and a Girl Scout troop. The public health nurse began tuberculin testing of the contacts; however, the need for support was soon recognized. As the numbers of contacts and sites increased, the state TB program offered assistance. Several CDPHE TB program staff assisted, as did a communicable disease epidemiologist.

The CDPHE TB program nurse consultant's visits to the county provided opportunities for additional education to those who needed it, including local public health staff, contacts, providers, and community members. Being on site was invaluable in understanding the anxiety created as the numbers of sites and contacts grew. It also provided the opportunity to assess new problems as they arose, make quick decisions, and give directions. The CDPHE TB program nurse consultant was able to obtain immediate guidance while on site from the expert physicians at Denver Public Health when needed.

A total of 321 people were initially tested, and a list of 267 true contacts was developed for the follow-up testing. A large number of the contacts were foreign-born persons, coming from many countries around the world, including high-incidence countries. This added confusion to the task of determining transmission and controlling the scope of the investigation.

Local clinicians were contacted and given recommendations regarding follow-up of their patients who were named as contacts. Questions and discussion were encouraged.

Results of the contact investigation identified one additional person with active TB. She was treated by DOT with 4 months of therapy since she had a negative culture but clinical improvement. This patient was also from Uganda and traveled with the index case.

There were 56 contacts identified with latent TB infection (LTBI), of which 38 were started on treatment with INH; 39 of these contacts were foreign-born persons. To date, 30 contacts continue their therapy. Several patients returned to their home countries during the investigation. Referrals were made where possible.

BT Exercise

The local public health nursing director requested assistance from the bioterrorism (BT) program in conducting the contact investigation. The bioterrorism (BT) program felt the follow-up tuberculin testing would be an excellent opportunity to carry out a response exercise. Testing was accomplished at several clinics set up at the sites where contacts were identified. The BT program and rural public health agency gained experience in putting a plan together, initiating the plan, and making calls for assistance from the community, the surrounding counties, and the State TB and BT Programs. Public health nurses as well as support staff from many surrounding counties and the state responded to help with the testing clinics.

The nurses who responded not only received updated information on tuberculosis and testing procedures, but also were able to fulfill many objectives related to bioterrorism grant funding. The responders gained experience in how an actual event could evolve and a response would occur. The community and surrounding counties were able to practice the ability to put a plan together and modify it as the event progressed. The members of the BT exercise planning team gained experience in working together. It was beneficial for all involved to appreciate the effectiveness of program and regional collaborations.

One caveat or limitation of the TB/BT collaboration was that participating in the planning, initiation, and execution of the exercise increased the workload of both the CDPHE TB Program and the local public health agency. Those responders who were assigned to place and read skin tests were trained appropriately and monitored, with adjustments in assignments made as needed. The local public health nurse was responsible for arranging the clinics and making staffing assignments as responders volunteered. The public health nurse, who was assigned the role of incident commander, was responsible for the adjustment of staff before and during the clinics.

The participants in the event came away with new skills, new associates, and a sense of collaboration within public health and the community.

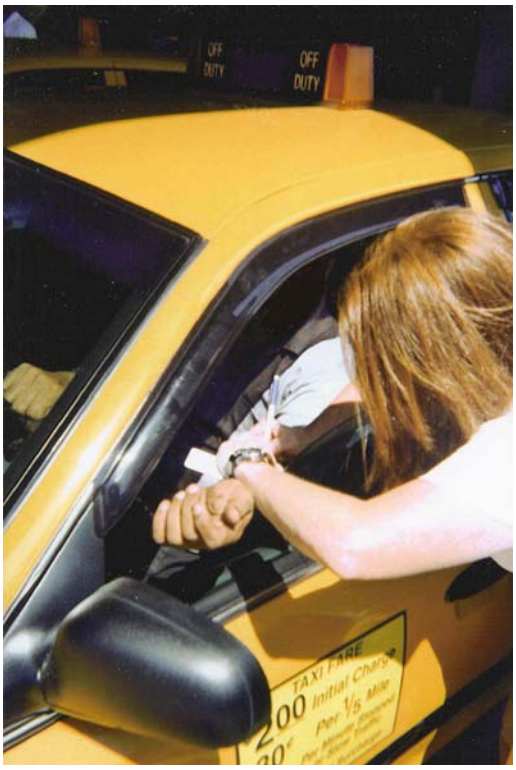
—Submitted by Gayle M. Schack, RN, Nurse Consultant, and Juli Bettridge, Health Professional III, Colorado Dept of Public Health and Environment

Thinking Outside the Box to Control TB in the Foreign-born: Taxi Workers in New York

The data in this article were previously reported in the following publication:

Gany F, Trinh-Shevrin C, Changrani J. Drive-by readings: a creative strategy for tuberculosis control among immigrants. American Journal of Public Health January 2005; 95(1):117-119.

While current strategies to find persons with TB and their close contacts are effective for US-born populations at risk for TB, there are missed opportunities in reaching communities disproportionately burdened with latent TB infection (LTBI). There is a large segment of the population, recent immigrants from high TB prevalence areas, for which targeted testing and treatment is needed.



To effect TB control in immigrant communities, the Center for Immigrant Health (CIH), New York University (NYU) School of Medicine, in partnership with the New York City Department of Health and Mental Hygiene, implemented the "Community Tuberculosis Prevention Program" (CTPP). CTPP provides LTBI community outreach, education, screening, and case management. Most of CTPP's clients are recent immigrants with no prior health care access. CTPP uses creative approaches that consider immigrant communities' unique circumstances.

There are over 40,000 taxi drivers in New York City. The members of this largely immigrant workforce work long hours and face multiple challenges to maintaining health, including occupational, economic, linguistic, and cultural barriers. Taxi workers often hail from countries where TB is endemic. As such, they are at risk for LTBI.

John F. Kennedy Airport (JFK) is a major site of taxi activity. Drivers await their turn to pick up passengers in JFK's Central Holding Lot, in some cases for several hours. Staff of CIH saw this as a key window of opportunity for intervention: an at-risk, mobile population, now a captive audience.

To reach this group, six multilingual CIH staff provided TB education and screening to 123 taxi drivers in the Holding Lot. To accommodate the drivers' way of life and their concerns that a loss in driving time is a loss of income, the readings were held 2 and 3 days later in the fire lane at a centrally located municipal hospital. The drivers drove through the lane and held their arms out for TST measurement. If their result was negative, they were given a letter stating the result, and drove on. If positive, they were given appointments for follow-up.

In this manner, 123 taxi drivers from over 25 countries were tested for LTBI. Most of the drivers (97%) were born outside of the United States, with two thirds of the 123 being from four countries: Pakistan, India, Haiti, and Bangladesh. As many as 102 (83%) of the drivers had no health insurance. Only 26 (21%) drivers had a family doctor. Nearly two thirds (81/123) of the drivers had never before been tested for TB.

We found that 48 had TST-positive results, which was nearly 62% of the 78 who returned and approximately 39% of the 123 total individuals screened. Over 40% (15/34) of those scheduled for an evaluation on a day other than the reading did not get one, most because of concerns about convenience or cost, and one because he was advised by his private physician that he did not need it. In addition, 64% (16/25) of those who received a full physician evaluation were advised *not* to start treatment for LTBI. Of these, 37.5% (6/16) had reported co-existing medical conditions or TB exposure associated with a high risk for TB; nine individuals were advised to start treatment for LTBI; eight individuals initiated treatment; 50% of them completed. Those who did not complete treatment cited as reasons having side effects, and leaving the country for a prolonged period of time.

The program demonstrated that innovative approaches to reaching at-risk immigrant populations can be effective. However, such programs must similarly include ease of follow-up after screening and provider education to ensure that patients are receiving care according to CDC guidelines.

—Reported by Francesca Gany, MD, MS, Director
Jyotsna Changrani, MD, MPH, Assistant Director
Center for Immigrant Health,
NYU School of Medicine

SAVE THE DATE

The 2005 Program Managers Course is being held October 24-28, 2005, in Atlanta, Georgia. Course participants are nominated by the DTBE program consultant for their area. Please contact your DTBE consultant if interested in attending.

Division of Tuberculosis Elimination 2005 World TB Day Activities

Several DTBE senior staff members participated in a number of national World TB Day activities. On March 24, the Metropolitan Chicago Tuberculosis Coalition held a World TB Day observance; the theme of the event was "TB: Educate to Eliminate." Representing DTBE on the program was Dr. Wanda Walton, Chief, Communications, Education, and Behavioral Studies Branch.

The Hawaii State Tuberculosis Control Program and The Queen's Medical Center, in partnership with The Queen Emma Clinic and the American Lung Association Hawaii Chapter, sponsored a lecture entitled "Introduction to QuantiFERON-TB Gold, A New Diagnostic Test for TB Infection." Featured speakers included Dr. Gerald Mazurek, CDC Medical Officer-Epidemiologist, DTBE; Dr. James Rothel, Chief Scientific Officer/Executive Director, Cellestis Limited; and Dr. Jessie Wing, CDC Medical Officer and Chief, Hawaii State Tuberculosis Control Program.

Dr. Tom Navin, Chief, Surveillance, Epidemiology, and Outbreak Investigations Branch, DTBE, spoke at the Grand Rounds, University Hospital, University of Missouri-Columbia. The topic was the TB Genotyping Program.

The Fort Wayne – Allen County Department of Health, Parkview Hospital, and the Fort Wayne Medical Education Program hosted a seminar entitled "Tuberculosis for the Frontline Provider," presented by Dr. Philip Lobue from DTBE.

The Kansas Department of Health and Environment hosted a continuing education program for health care professionals titled, "Opportunities to Eliminate TB: Lessons from Recent Kansas Cases." Case presentations were made by leading state TB physicians and a key note address was presented by Dr. Zachary Taylor, Chief of the Field Service and Evaluation Branch of DTBE.

Dr. Kenneth Castro, Director, DTBE, participated in a teleconference hosted by the Global Alliance for TB Drug Development. This teleconference provided an overview on the launch of a New Drug Discovery Program by the TB Alliance in partnership with GlaxoSmithKline.

DTBE hosted a luncheon for CDC staff and guests on March 24 in observance of World TB Day. Please see the next article about the event.

On April 4, the United States-Mexico Border Health Commission convened a meeting to discuss the progress of the Binational Card Project. The meeting occurred in Ciudad Juarez, Mexico. Featured speakers were Dr. Kenneth G. Castro and Dr. Oscar Velásquez, Director General, Centro Nacional de Vigilancia Epidemiológica, Secretaría de Salud.

An article titled "Tuberculosis – United States, 2004" appeared in the March 18 edition of the *Morbidity and Mortality Weekly Report (MMWR).*

This article presents provisional TB case and rate data reported for 2004. The article also discusses CDC's efforts in addressing the high rates of TB among foreign-born persons and blacks in the United States. A front-page box about the history and importance of World TB Day also appears on the cover of the March 18 *MMWR*.

DTBE added a 2005 World TB Day section to its website that may be visited at www.cdc.gov/nchstp/tb/WorldTBDay/2005/default.htm. The World TB Day section features a page with the history of World TB Day and its importance today, a page featuring the materials mentioned above (and other TB educational materials), and an activities page that features an interactive map of World TB Day activities around the United States.

DTBE and the National Prevention Information Network (NPIN) also created a 2005 World TB Day section on the NPIN website that contains information about World TB Day and various TB-related materials. The NPIN World TB Day section may be visited at www.cdcnpin.org/scripts/spotlight/spot_wtd05.asp. The 2005 World TB Day sections of the DTBE and NPIN websites will remain available throughout the year.

In addition, the CDC website home page and the CDC en Espanol home page featured a World TB Day "Spotlite" during the weeks of March 14 and 21.

To assist TB controllers and other partners throughout the United States in their TB elimination efforts, a variety of updated World TB Day materials for use in local efforts were produced and distributed. These updated materials, available for order at www.cdc.gov/nchstp/tb/WorldTBDay/2005/resources.htm, include:

- A variety of World TB Day posters.
- "TB Elimination: Now Is the Time" brochure. This brochure contains key messages about TB not being a disease of the past, the consequences of neglecting TB control programs, and what must be done to finish the job of eliminating TB in the United States.
- "A Global Perspective on Tuberculosis" fact sheet. This fact sheet contains historical information on World TB Day, the impact of TB worldwide, and global TB data.
- "Tuberculosis in Minorities" fact sheet. This fact sheet discusses the disproportionate burden of TB in minorities and factors likely to contribute to this burden.
- "Tuberculosis in Blacks" fact sheet. This fact sheet presents TB morbidity rates for black non-Hispanic persons in the United States. These data emphasize the need to eliminate TB and to focus on preventing and controlling TB in this minority group.

—Reported by Scott McCoy, MEd
Division of TB Elimination

DTBE Hosts World TB Day Luncheon

World TB Day is observed every year on March 24. This annual event commemorates the date in 1882 when Dr. Robert Koch announced his discovery of the bacillus that causes TB. This year, CDC's DTBE held a potluck luncheon in Atlanta on March 24 to commemorate World TB Day. Dr. Ken Castro, Director, DTBE, served as the keynote speaker for this special occasion. During the course of the luncheon, the winners of a TB Trivia Contest were announced and prizes for 1st, 2nd, and 3rd place were awarded along with door prizes from the Atlanta business community. The winners of the Trivia Contest were Brian L. Sizemore, Jawad Asghar, and Madhusudan R. Chaganthi, respectively, who were the first three to correctly answer all the questions. The honorable mentions who also correctly answered all five questions were Lois Diem, Dave Crowder, Juanita Elder, and Amera Khan. Members of the division and other special guests participated in the division's first luncheon to recognize World TB Day.

—Reported by Vic Tomlinson, Gail Grant, and Scott McCoy, MEd
Div of TB Elimination

TB EDUCATION AND TRAINING NETWORK UPDATES

Member Highlight

Gayle M. Schack, BSN, is a Nurse Consultant with the Colorado Department of Public Health and Environment. She received her BSN from Arizona State University in 1979, and a Health Services Credential from California State University – Los Angeles in 1991.

Gayle provides expert consultation, case management, and guidance in the care of persons with suspected or confirmed TB and their contacts, and supervises patient care provided by the public health nurses in local health care agencies. She provides technical advice as well as education and training about TB to physicians, nurses, and other professionals throughout the state.

She heard about the TB Education and Training Network (TB ETN) through mailings and e-mails sent out by TB ETN, as well as from Judy Gibson of DTBE, who sends informational e-mails to other nurses. Gayle joined TB ETN to become a member of a group of nurses and other health care providers who see the need for TB education. She also wanted to learn what is available and what other education and training strategies have been used around the nation; in addition, she wanted to learn from others. Gayle joined the Membership subcommittee of TB ETN in an effort to learn more about what TB ETN has to offer; she also wanted to understand the difference between TB ETN and the TB resource network.

Gayle is optimistic about what TB ETN can accomplish. "Basically, I see education as a means to improve patient care. Improved patient outcomes are a result of timely and appropriate diagnosis and treatment. Once a case is diagnosed, contact investigation can be initiated quickly and more cases identified or prevented," Gayle stated. She would like to see an increased awareness around the nation of how TB ETN can help improve patient care by ensuring providers are educated. "I see this group as an important organization in assisting public health providers to acquire the knowledge and tools necessary to provide education to other health care providers in a time of few TB experts. By providing continued and current education to those who see the patients, we should see a lessening in misdiagnosis," Gayle commented.

Gayle has a "TB 101" slide presentation that she revises to meet the needs of each audience. "I spend most of my training time educating local public health nurses. I particularly enjoy discussing current cases with the health care providers and helping solve problems through education," Gayle explained. Last summer she

presented a modified TB 101 to epidemiologists in the local bioterrorism program, hoping that these persons would be able to help in a future TB outbreak by assisting in contact investigations and surveillance. In addition to the TB 101 training, Gayle also worked with the bioterrorism program in staging an exercise. A large contact investigation being conducted in a rural community was chosen to become a bioterrorism response exercise; the second round of testing of the contact investigation was chosen for the exercise. Her job was to provide quick education to the nurses and others regarding TB and how to place or read a TST. You can read more about this event in Gayle's article, Misdiagnosis in Rural Colorado, which appears earlier in this issue.

Gayle is involved with TB Epidemiologic Studies Consortium (TBESC) Task Order #6, Regional Capacity Building in Low-Incidence Areas. She is part of the technical team charged with writing a TB manual for low-incidence states. Since she has been involved in Task Order #6, she has enjoyed working with other nurses such as Kim Field and Brenda Ashkar (who about 18 years ago told her to go and get more TB experience when Gayle, as a young PHN, approached her for a position in Los Angeles TB control). Gayle is also a long-time member of the planning committee for the Four Corners TB/HIV conference.

Gayle has a personal reason for her dedication to TB control. "My parents were both hospitalized in the TB sanatorium in Phoenix in the early 1960s. The Arizona TB program assisted me recently in obtaining the records of their treatment. All that is left is a note card for each of my parents. My mother was in the sanatorium for 1½ years and released 'with consent.' My father was in the sanatorium for 4 months and left against medical advice. I didn't know you could do that back then! That [period of hospitalization] left seven kids at home. I was about 5 at the time and second to the youngest. Arrangements were made so we could all remain at home. My older siblings went to high school half days, some in the morning and some in the afternoon, so they could take care of us younger kids. I remember visiting with my mother through a chain link fence. Even though I have worked in TB for 18 years and have a family history of TB, I remain TST negative!" Gayle shared.

Gayle's favorite relaxation activity is "baking" on a beach with a good book. "Most of my vacations involve warm weather and a beach," Gayle notes. Gayle has two wonderful sons, Chris, 22 and Brian, 18; both are in college, soon to start their own adventures. She and her husband of 25 years enjoy traveling: "My husband and I hope to travel more in the near future. We have recently enjoyed the beaches in Maui and Nassau. We also enjoy road trips and plan to take more of them starting in 2005," Gayle says. She also reads a lot now that her children are grown.

If you'd like to join Gayle as a TB ETN member and take advantage of all TB ETN has to offer, please send an e-mail requesting a TB ETN registration form to tbetn@cdc.gov. You can also send a request by fax to (404) 639-8960 or by mail to the following:
TB ETN
CDC, DTBE, CEBSB
1600 Clifton Rd., N.E., MS E10
Atlanta, Georgia 30333

If you would like additional information about the TB Education and Training Network, visit the website at http://www.cdc.gov.nchstp/tb/TBETN/default.htm.

—Submitted by Regina Bess
Div of TB Elimination

Cultural Competency Subcommittee Update

The goal of the Cultural Competency Subcommittee is to promote cultural competency among members of TB ETN. The subcommittee strives to do this by-

- Identifying tools, materials, and other resources in the area of cultural competency and make these available to TB ETN members,
- Providing a forum for TB ETN members to network with others in the area of cultural competency, and
- Promoting the availability of the cultural competency subcommittee as a resource for input on cultural or linguistic issues.

In recent months, our Subcommittee has provided input for the New Jersey Model TB Center's Cultural Competency Newsletter and their case studies solicitation effort. Lauren Moschetta, a Subcommittee member, is working on this project and our Subcommittee has given ideas as well as support for this endeavor.

We have provided feedback for the CDC's ethnographic studies project, spearheaded by Cathy Rawls. We reviewed the draft of the outline that will be used to share the results and plan to review the ethnographic profiles when completed. The data were collected at four sites in the United States and includes five profiled population groups, including immigrants from Mexico, Laos, China, Vietnam, and Somalia. The research study includes information on immigration history and patterns, beliefs about TB, and immigrants' experiences with TB treatment in the United States.

A needs assessment regarding cultural competency issues began in the fall of 2002, and the results were presented at the TB ETN conference in August 2003. The results of this needs assessment have driven our activities as a Subcommittee since that time. However, with the growth in membership of TB ETN, we see a need for revisiting and possibly repeating the needs assessment. A team from our Subcommittee was formed to address this issue.

The Cultural Competency Subcommittee is composed of TB trainers and educators who are dedicated to cultural competency and its application to TB control activities. If you are interested in joining this subcommittee, please send an e-mail to tbetn@cdc.gov.

Cultural Competency Quote

"A multicultural curriculum must address how to articulate a relationship between unity and difference that moves beyond simplistic binarisms. That is, rather than defining multiculturalism as against unity or simply for difference, it is crucial for educators to develop a unity-in-difference position in which new forms of democratic representation, participation, and citizenship provide a forum for creating unity without denying the particular, the multiple, and the specific. In this instance, the interrelationship of different cultures and identities become borderlands, sites of crossing, negotiation, translation, and dialogue."

—Giroux HA. "Curriculum, multiculturalism, and the politics of identity." *NASSP* Bulletin* Dec. 1992;76(548):1-11.

*National Association of Secondary School Principals

—Submitted by Julie McCallum, RN, MPH
American Lung Association of Michigan
TB ETN Cultural Competency Subcommittee

INTERNATIONAL UPDATE

Trial to Compare 6 Months vs Continuous IPT Launched in Botswana

Botswana has one of the highest rates of TB in the world (reported incidence of 623/100,000 in 2002) and a very high prevalence of HIV infection (37.4% prevalence among pregnant women attending antenatal clinic, 2003 data). Since people living with HIV/AIDS (PLWHA) are at much higher risk of developing active pulmonary TB than individuals with normal immune systems, the World Health Organization recommended in 1998 that PLWHA receive short-term isoniazid

preventive therapy (IPT) to treat latent TB infection.

IPT substantially reduces the risk that a person with latent TB infection (LTBI) will progress to TB disease. However, once the course of prophylactic treatment ends, PLWHA can be reinfected with TB, especially in countries such as Botswana where TB is highly endemic. A major clinical trial expected to enroll 1,800 HIV-infected adults was launched on November 23, 2004, in order to compare the standard 6 months of IPT with continuous IPT. The catchment area for the trial includes Botswana's two major urban areas, Francistown and Gaborone. This 4-year study will be the first such long-term assessment of the efficacy of continuous IPT among HIV-infected persons. The primary objective of the trial is to determine if continuous IPT (36 months) is superior to limited IPT (6 months) to prevent active TB, hospitalization, and death in PLWHA. Secondary objectives include estimating subject compliance with limited vs. continuous IPT, ascertaining the causes of morbidity and mortality among subjects, quantifying the generation of INH resistance in subjects who develop active TB during or after IPT, and identifying risk factors for the development of TB in persons taking limited vs. continuous IPT. Additionally, restriction fragment length polymorphism (RFLP) analysis will be performed on mycobacterial isolates in order to identify clusters which could suggest recent transmission, as well as to estimate the relative burden of recent transmission compared with progression to TB disease from LTBI.

The trial is designed to be closely allied with the existing government IPT program so that outcomes will be readily useful to a public health program. In lieu of a pilot of the study, the study was started gradually, but shortly the pace of enrolment will accelerate. As of Jan. 10, 2005, 30 persons were enrolled in the Botswana IPT Trial.

—Submitted by Taraz Samandari, MD
Div of TB Elimination

CLINICAL AND HEALTH SYSTEMS RESEARCH BRANCH UPDATE

Kab Mob Nstws: "Insects get inside of you and eat your lungs": Findings from an Ethnographic Study of the Hmong

In 2003, the Health Systems Research Team in DTBE's Clinical and Health Systems Research Branch (CHSRB) undertook a study to describe ethnographic aspects of the increasing burden of TB among foreign-born populations in the United States. The purpose was to provide TB programs with information from formative research that may be useful in planning interventions, evaluating programs to improve screening and treatment adherence, and designing surveys.

A qualitative, ethnographic approach was applied to elicit attitudes and beliefs about TB among five different foreign-born groups. To generate a range of responses, both persons who had received local TB services and those who had not were recruited. Bicultural, bilingual researchers conducted 200 interviews in the study participants' native language or in English. Persons born in Mexico, Somalia, Vietnam, Laos (Hmong), and China were recruited in Atlanta, GA; St. Paul-Minneapolis, MN; Denver, CO; and Boston, MA. The study's outcomes include site-specific recommendations, a field-tested cultural assessment tool, and five ethnographic profiles.

In order to assist in response to the recent outbreak of TB cases among Hmong refugees resettled in the United States, our study team, with the approval of the Minnesota study site, decided to share implications from the study findings regarding the Hmong through *TB Notes*. The following suggestions, based on interviews with 24 respondents, may be of use to TB programs accommodating Hmong clients.

Atlanta, GA (N=50)	Minneapolis-St. Paul, MN (N=50)	Denver, CO (N=50)	Boston, MA (N=50)
Mexico (n=24) Somalia (n=26)	Lao Hmong (n=24) Somalia (n=26)	Mexico (n=26) Vietnamese (n=24)	Vietnamese (n=24) Chinese (n=26)

► *Build on individual's basic knowledge about TB and target education to improve understanding of transmission.*
Generally, Hmong respondents possessed basic knowledge about TB and its symptoms, but understanding about transmission was somewhat less consistent. Besides airborne transmission, other commonly mentioned mechanisms included dirty food, fluid imbalance, exchange of body fluids, or some supernatural cause, such as a curse. Understanding was often multifaceted and included a concept of person-to-person transmission coupled with other means. Educational messages targeted to the Hmong community should reinforce accurate information about TB transmission, but also clarify how TB is NOT transmitted.

► *Emphasize the risk of past exposure and that prevention is available.*
In general, Hmong respondents lacked a solid understanding about TB prevention; less than half believed it was possible to prevent TB. While discussing prevention, respondents never mentioned LTBI treatment and only one referred to the BCG vaccine. Hmong respondents were also unable to name risk factors for TB, such as living in an endemic area. Respondents believed that a clean environment and healthy lifestyle in the United States meant they were at little risk. To address these misperceptions, educational messages should emphasize that their increased risk stems largely from exposure in their country of birth or in refugee camps. Emphasis should also be placed on developing messages to clearly explain how TB disease can be prevented in persons with a positive TB skin test reaction.

► *Be aware that some individuals may believe that TB has spiritual dimensions*.
While most Hmong respondents understood TB to have a natural cause, the idea that God or spirits might also play a role was evident throughout several of the interviews. From these respondents, it appears simplistic to assume that notions of disease causation among the Hmong must be *either* supernatural or natural. Similarly, folk etiologies, such as fluid imbalance, may be accepted in conjunction with biomedical explanations to define, explain, and categorize TB. This idea may be relevant when discussing prognosis and treatment options with Hmong clients; however, there is no evidence suggesting it is a barrier to screening or treatment.

► *Clearly explain an LTBI diagnosis, distinguishing it from a TB diagnosis, and recognize that barriers to accepting and completing treatment are often not cultural in origin.*
The interviews allowed respondents to discuss LTBI or TB without forcing the distinction between the two. Upon asking LTBI patients about their understanding of the diagnosis, a great deal of confusion was revealed, with many interpreting their diagnosis as the health care worker's (HCW's) inability to make a firm diagnosis. In this context, respondents criticized HCWs for sending inconsistent messages about their status and the need for treatment. This common experience resulted in loss of confidence in providers, in uncertainty about the need for treatment, and, ultimately, in diminished adherence. Hmong respondents explained that having a clear understanding of the need for LTBI medications would have reduced their anxiety about the diagnosis and made taking the medications easier. It is thus recommended to verify that LTBI patients have an adequate understanding of their LTBI diagnosis by having clients repeat back in their own words what they have understood. Other common reasons for nonadherence or difficulties with LTBI treatment were similar to those experienced by non-Hmong TB patients, and were related to side effects or trouble remembering to take medications daily.

► *Recognize and address the detrimental effect of mistrust of providers and of information relayed to Hmong clients.*
One theme that significantly complicated some Hmong respondents' ideas about TB was a distrust of information they were given in the United States. While mistrust was voiced by only some respondents, they had very strong sentiments that emerged repeatedly throughout the interview. Specifically, respondents asserted that TB did not exist and that U.S. physicians invented the disease to either conduct experiments on the Hmong or make money on "phony" treatments. Not surprisingly, this distrust influenced some respondents' decisions not to adhere to LTBI treatment.

Gauging a client's degree of comfort with his or her medical provider and with the prescribed treatment is important. Relying on linguistically and culturally appropriate as well as gender-matched peer educators to communicate important messages about TB and treatment would be a valuable practice.

► *Use bilingual, bicultural interpreters.*
Enhancing access to effective services begins with the removal of linguistic barriers. Non-English speaking respondents reported that HCWs talked to them in English despite their inability to understand. Furthermore, respondents commented that they wanted to interact with Hmong staff who could not only interpret effectively but also understand and respect Hmong traditions and social norms.

► *Recognize the emotional distress that may accompany a TB diagnosis.*
Stigma surrounding TB was apparent throughout the Hmong interviews. Findings indicate that Hmong persons may associate TB with an immoral, unclean lifestyle. It was reported that in Laos, stigma and lack of access to care meant a person with TB would suffer social isolation and death. However, in the United States, where treatment is known to exist, delays in care-seeking were considered less likely. Nonetheless, respondents often felt that the ramifications would be more emotional than physical if they were to develop TB in the United States.

Concerns about social seclusion, which was described equally as self- and community-imposed, could be addressed with community and client education (e.g., by communicating clearly that isolation during treatment is necessary only for a limited period). Further, emphasizing community outreach messages about the TB clinic's strict confidentiality policies may also diminish some concerns about social rejection and reinforce the clinic staff's trustworthiness. Minimizing opportunities for others in the waiting area to overhear client-staff discussions about TB will also contribute to the community's faith in the clinic's maintenance of confidentiality.

► *Assess each client's desire for information about TB and tailor education.*
Less than half of the Hmong sample wanted additional TB information. This stemmed from a common idea that elderly Hmong are incapable of learning new information. It was often reported that when HCWs provided information, written materials were thrown away or the oral discussion was given scant attention because it was considered impossible to understand – even in the Hmong language. The desire to learn more seemed to increase with English-speaking ability and literacy. Before HCWs attempt to provide education to Hmong clients, especially the elderly, they should first assess the client's desire and capacity to acquire more information and the preferred format (e.g., discussion, pamphlets, and videos). When possible, provide information in a tailored format that maximizes the client's understanding. Because English and Hmong illiteracy is common in the Hmong community, relying primarily on written materials is not recommended.

► *Avoid making assumptions about a person's attitudes, beliefs, and behaviors.*

The results from this study suggest that while there are some patterns of TB understanding and attitudes, there was plenty of diversity as well. Evidence from this study suggests that English-speaking ability and literacy, age, and educational attainment may affect some beliefs and attitudes about TB. As a whole, these findings imply that each client should be understood as an individual living in a cultural environment. Although this article suggests some areas for the HCW to explore with Hmong clients, it remains the obligation of the HCW to gauge each client's knowledge, beliefs and attitudes, recognizing that these may influence TB care-seeking and medication-taking behavior.

In closing, the study investigators are conducting further analysis of the data for the other four foreign-born groups. The team is also developing ethnographic profiles for each group, which will be made available to TB program staff upon completion. If you would like more information about this study or its findings, please contact Heather Joseph (hbj7@cdc.gov) or Robin Shrestha-Kuwahara (rbk5@cdc.gov).

—Submitted by Heather Joseph, MPH
Div of TB Elimination

TB TRIALS CONSORTIUM UPDATE

Focus on Pharmacokinetic (PK) Studies

The purpose of the TB Trials Consortium (TBTC) is to conduct programmatically relevant research that expands treatment and prevention options for TB control worldwide. The CDC and 28 clinical sites across the United States, Canada, and abroad (Uganda, South Africa, Brazil, and Spain) share overall consortium leadership in the conduct of 1) studies to evaluate the safety and efficacy of new TB treatment regimens; 2) pharmacokinetic studies of TB and HIV medication interactions; 3) studies of nucleic acid amplification methodologies in the diagnosis and management of active TB; and 4) studies of treatment for latent TB infection.

Evaluating possible causes for lower effectiveness of TB treatment with once-weekly rifapentine and isoniazid: studies 22PK and 25PK.
Rifapentine (RPT) is a rifamycin derivative with a very long half-life that is suitable for use in once-weekly treatment regimens for TB. Early studies using a once-weekly RPT and isoniazid (INH) regimen (RPT dose = 600 mg) found the treatment to be less effective than standard daily or twice-weekly therapy with INH and rifampin (RIF) [1,2]. Some experts suggested that the dose of RPT may have been too low and that low RPT concentrations were to blame for the failures.

Study 22 was a randomized trial of once-weekly INH/RPT vs twice weekly INH/rifampin (RIF) in the continuation phase of therapy, and enrolled over 1000 patients [3]. Both HIV-infected and HIV-uninfected patients were enrolled in the trial. Enrollment was closed early to HIV seropositive patients because of a high rate of acquired rifampin resistant relapses occurring among HIV seropositive patients on the once-weekly INH/RPT treatment [4]. Overall rates of failure/relapse in HIV-negative patients were 9.2% with INH/RPT and 5.6% with INH/RIF. In patients without cavitary disease (a major risk factor for relapse), rates of failure or relapse were 2.9% and 2.5% respectively.

Study 22PK enrolled 133 of 1004 HIV-seronegative patients from the parent study and 33 of 71 HIV-seropositive patients from the parent study. Overall, 54% (40 of 74) of all patients with failure or relapse in the treatment trial were included in the PK study. The analysis found that failures or relapses in the RPT arm were associated with low INH concentrations and with rapid INH acetylator type (higher metabolism of INH which leads to lower levels than in slow acetylators). [5] These data suggest there is a substantive role for INH (the companion drug) in

the continuation phase of once-weekly, RPT-based therapy.

Study 25 was a prospective, randomized, double-blind study comparing the tolerability of RPT doses of 600, 900, and 1,200 mg, all given with INH in the continuation phase of TB treatment among 150 patients. All dose sizes were generally well-tolerated and safe. There was a nonsignificant trend toward higher drug-related toxicity at RPT doses higher than 20 mg/kg. The study found that a 900-mg dose is generally safe and well-tolerated, and that the 1,200-mg dose warrants further evaluation. [6]

Study 25PK enrolled 35 of the 150 Study 25 patients. This PK sub-study found that higher RPT doses (600, 900, and 1,200 mg) directly correlated with increasing drug concentrations (measured as mean area-under-plasma-concentration time curve [mean AUC]; mean AUC was 296, 410, and 477 µg*h/ml at 600, 900, and 1,200 mg doses respectively). It also found that over half of patients had detectable RPT plasma concentrations for more than 36 hours after clearance of the concurrently administered INH. Higher RPT concentrations were achieved with greater doses, but clearance of INH did not match that of RPT. [7]

Taken together, these data support continued pursuit of RPT-based TB regimens, especially with a companion drug that will have a long half-life similar to RPT. The newer quinolone, moxifloxacin, is one such candidate (see Study 27 and 28 enrollment updates below). Study 25 results suggested that a higher dose of RPT could be used safely, and thus 900 mg of RPT was chosen for the large TBTC prevention trial (Study 26) that is currently underway.

Drug-drug interactions in concurrent treatments of HIV and TB: Study 23PK

On a worldwide basis, TB is one of the most common opportunistic infections among persons with HIV infection and is associated with a high rate of HIV disease progression. TB patients coinfected with HIV should thus be a high-priority population for anti-HIV treatment, or highly-active antiretroviral therapy (HAART). Drug-drug interactions between RIF, the key drug in short-course TB treatment, and protease inhibitors, one of the major classes of anti-HIV drugs, make concurrent treatment of TB and HIV difficult. Rifampin induces rapid metabolism of protease inhibitors, making them ineffective. Rifabutin is a rifamycin closely related to rifampin, with similar activity against *M. tuberculosis* in vitro and in clinical trials. Compared to rifampin, it is a less potent inducer of hepatic cytochrome P450 enzymes, and thus has less effect on the metabolism of protease inhibitors. Consequently it has been recommended for use in the treatment of HIV-TB when HAART Is to be administered concurrently. However, there was relatively little published experience with rifabutin for treatment of HIV-related TB.

Study 23 evaluated HIV-infected patients with TB treated by DOT using a twice-weekly rifabutin-based regimen. The study was a single-arm trial designed to evaluate the safety and efficacy of rifabutin-containing short-course therapy for HIV-infected TB patients. Subjects were allowed to take antiretroviral therapy as prescribed by their HIV/AIDS care provider. During the first 2 months of TB treatment, the intensive phase, patients were treated with INH, PZA, and ethambutol, in addition to rifabutin. After 2 months of TB treatment, all patients were treated with twice-weekly rifabutin plus INH. The use of HAART and the timing of its initiation were at the discretion of the HIV care provider. Although the rate of treatment failure or relapse was not comparable (9/169 or 5%) to other treatment studies, 8 of the 9 patients with failure or relapses had acquired rifamycin resistance (ARR). All patients with ARR had advanced AIDS (CD4 cell count < 100). Because of this unexpectedly high rate of ARR, enrollment into the trial was stopped early. Twice weekly TB therapy is no longer recommended for patients with advanced AIDS (CD4 cell count < 100) [8].

Study 23A-PK included 102 of the 169 total patients enrolled in the parent study. This is the largest study to date of TB drug pharmacokinetics in HIV-infected patients and the first to study drug pharmacokinetics associated with acquired rifamycin resistance [9]. Low rifabutin concentrations and to a lesser extent low INH concentrations were associated with rifamycin-resistant treatment failure or relapse. Additionally, the concentrations of INH in the HIV-infected patients with TB were lower than those generally seen in HIV-uninfected TB patients [10]. Two other substudies examined interactions between rifabutin and nelfinavir or efavirenz.

Study 23B-PK: Data were collected from seven patients with HIV and TB started on nelfinavir-based HIV treatment during Study 23. This substudy measured RBT levels while on 300 INH/300 RBT biweekly before starting antiretrovirals, and then again after starting nelfinavir (1250 bid) plus two nucleosides, and while continuing the same TB drug dosing. The study found that nelfinavir levels were similar to those reported in previous studies of this dose and that rifabutin levels increased significantly after starting nelfinavir. The study concluded that dosing based on current guidelines does result in increased rifabutin levels but these levels were still within acceptable range for efficacy and safety [11].

Study 23C-PK: Data were collected from 15 patients with HIV and TB started on efavirenz-based HIV treatment during Study 23. This substudy measured RBT levels while on 300 INH/300 RBT biweekly before starting anti-HIV therapy, and then again after starting Efavirenz (600 mg qhs) plus two nucleosides, and while increasing the RBT dose to 600 RBT biweekly (in combination with the same dose of INH). The study demonstrated that a rifabutin dose increase from 300 mg to 600 mg was adequate to compensate for the efavirenz drug interaction, and that efavirenz levels were comparable to historical controls [12].

In summary, TBTC has been able to carry out pharmacokinetic studies associating TB drug levels with disease outcome and host conditions. Results to date have helped shape current treatment guidelines [13] and demonstrate the importance of incorporating pharmacokinetic evaluations into studies of new regimens for treating TB.

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Study enrollment updates:
Study 24 a single-arm study of largely intermittent, short-course therapy for patients with INH-resistant TB or INH intolerance. Enrollment closed December 2004 with a total of 98 patients. By mid 2007, all patients will have reached the end of follow-up for study outcomes (treatment failure and relapse).

Study 26 is a trial of short-course treatment of latent TB infection among contacts of active cases, using a 3-month once-weekly regimen of isoniazid 900 mg and rifapentine 900 mg, compared to standard 9-month therapy with isoniazid 300 mg. As of May 12, 2005, Study 26 enrollment is up to 4,485, well over half of the goal of 7,700 subjects for total enrollment.

Study 27 is a double-blind, placebo-controlled comparison of the efficacy and tolerability of moxifloxacin versus ethambutol in the initiation phase of treatment of pulmonary TB. Enrollment began in July 2003 at North America TBTC sites, in September 2003 at the Kampala, Uganda, site and in July 2004 at the Durban, South Africa, site. The enrollment goal was recently increased from 300 to 330 patients in order to ensure sufficient data for evaluation. Enrollment was completed in March 2005, with a total of 337 patients. Results will be presented in May 2005.

Study 28, evaluation of a moxifloxacin-based, isoniazid-sparing regimen for TB treatment. The main comparison in Study 28 involves moxifloxacin with isoniazid (rather than with ethambutol). Data from the murine model of tuberculosis influenced this trial design; in the murine model the substitution of moxifloxacin for isoniazid resulted in significant reductions in the time to culture conversion and the time to sterilization when compared to the standard combination of rifampin, isoniazid, and pyrazinamide. This Phase II clinical trial will compare the safety and activity of a moxifloxacin-

containing regimen (moxifloxacin, rifampin, pyrazinamide, ethambutol) in which moxifloxacin has been substituted for isoniazid, to the standard control regimen (isoniazid, rifampin, pyrazinamide, ethambutol) in the first 2 months of treatment of sputum smear-positive pulmonary TB. Improved sputum culture conversion after 2 months of treatment with a moxifloxacin-containing regimen would support phase 3 clinical trials of moxifloxacin-based treatment regimens of less than the current 6-month standard regimens. The plan is to enroll 410 patients from both domestic and international TBTC sites. Enrollment is expected to begin by May 2005.

—Submitted by Susan M. Ray, MD
Emory Univ. School of Medicine
Member, Advocacy & External Relations Committee
TB Trials Consortium

SURVEILLANCE, EPIDEMIOLOGY, AND OUTBREAK INVESTIGATIONS BRANCH UPDATES

Update on the TB Biotechnology Engagement Program in the Republics of Armenia and Georgia, Spring 2005

Background - The Biotechnology Engagement Program (BTEP) is an initiative of the US Department of Health and Human Services (HHS), Office of Global Health Affairs (OGHA), designed to empower biodefense scientists from nations of the former Soviet Union to work on important public health problems in their home countries. The rationale for the program is that engaging these scientists on important public health efforts that lead to meaningful and productive outcomes will help deter them from bioweapons development. Congress appropriates funding for the program to the State Department; the State Department then allocates this funding among programs in HHS. The program provides up to 36 months of financial support and encourages collaboration between former Soviet Union biodefense scientists and U.S. experts in areas of strengthening surveillance and operational research that address urgent public health concerns. In the two former Soviet Union republics of Armenia and Georgia, the incidence and prevalence of TB are thought to be significantly underreported, in part because of two independent reporting systems in each country. However, it is apparent that morbidity and mortality have increased remarkably since they gained independence. According to their own official statistics, the Republic of Armenia experienced a 3-fold increase in TB morbidity, from 282 TB cases reported in 1991 (14 of these cases were in children) to 896 in 2001 (38 of these cases were in children). The sharp rise in TB in children is of grave concern and indicates significant ongoing transmission of TB in Armenia. However, the TB hospital data show an even greater increase, from 724 cases reported in 1991 to 1343 in 2001. Concomitant with this increase in absolute numbers of TB cases in the past 10 years was a dramatic drop in the population from approximately 3.8 million in 1991 to 2.5 million in 2001, owing largely to emigration to other countries (e.g., Russia and the United States).

Despite this drop, the 1991 demographic data are still used to calculate the official Armenian Ministry of Health (AMOH) TB incidence and prevalence rates, which are understated. Further, anecdotally, the rise in multidrug-resistant *M. tuberculosis* (MDR TB) may have reached significant levels, but the data are lacking. Officials do know that 20% to 25% of all *M. tuberculosis* isolates are resistant to at least one antibiotic. The exact levels of MDR TB are difficult to ascertain because of an inadequate system of laboratory information at the Armenian National TB Reference Laboratory. AMOH officials attribute rising drug-resistant TB to poor compliance and follow-up of diagnosed TB patients and the increasing incidence of TB in the prison system.

Republics of Armenia and Georgia TB BTEP- In collaboration with Armenian and Georgian Ministry of Health colleagues, CDC staff have developed a TB BTEP project titled "Development of Multidrug-Resistant Tuberculosis Surveillance and National TB Program Evaluations, Republics of Armenia and Georgia." Awarded 3 years of funding by the Department of State and the HHS OGHA effective October 2004, this project consists of nine tasks designed to both empower local public health officials and build capacity in program evaluation and management, operations research, surveillance, epidemiology, data management, and health economics. It is also consistent with the more-encompassing public health TB reform efforts in both countries. Armenian and Georgian TB public health officials aim to develop TB programs that highlight public health decentralization and integration into local health department information systems. Finally, the BTEP project provides significant added value to existing public health prevention and control activities, while not detracting from ongoing activities. The BTEP team members, Republic of Armenia, 2004, are pictured below.

Planned Armenia and Georgia TB BTEP Tasks-

1. Describe the current system for TB surveillance in Armenia and Georgia
2. Conduct a formal evaluation of the TB surveillance systems in Armenia and Georgia
3. Conduct operational research to clarify uncertainty regarding TB incidence (reported and unreported) in Armenia and Georgia
4. Gain a better understanding of the burden of undetected TB cases
5. Determine private-sector use of TB medications
6. Evaluate data management systems at peripheral and national levels
7. Measure the magnitude of MDR TB in Armenia and Georgia
8. Evaluate a TB patient population group called "chronics." Data from the evaluation will be used to change a public health policy that is ineffective and wasteful of resources
9. Provide training to Armenian and Georgian national TB control staff, both in country as well as in the United States, in epidemiology, biostatistics, TB prevention and control, TB medical management, scientific writing, and advocacy.

Tasks 1 and 2 - Of the nine tasks, Tasks 1 and 2 are to describe and evaluate the current TB surveillance system in Armenia, respectively. These tasks began last fall and provide a more complete understanding of the TB situation in these countries. Tasks 1 and 2 are now completed, and copies of these reports are available upon request.

Conclusions - The Armenia and Georgia TB BTEP project has several unique aspects. In addition to empowerment, the program activities support ongoing TB reform activities in both countries. The project also adds value to existing nongovernmental organization support of TB reform efforts. Further, it builds capacity among local collaborators through learn-as you-do efforts as well as through formal classroom training both in country and in the United States.

The BTEP website can be accessed at http://www.hhs.gov/ogha/europeaffairsdhhs.shtml

—Submitted by Sylvera Demas, MPH, and Scott J.N. McNabb, PhD, MS
Div of TB Elimination
(Dr. McNabb is one of the U.S. scientists participating in BTEP)

DTBE Helps US Govt Delegation Prepare for 2005 WHO Meeting in Geneva: A Rotation in the SES Candidate Development Program

Background and Purpose

Each year, the Secretary of the Department of Health and Human Services (HHS)—as a member of the World Health Organization Executive Board (WHO/EB)—makes an informed, evidence-based U.S. government (USG) policy and technical response to the varied health positions posed on global health by the WHO Secretariat. These varied global public health issues range from childhood immunization to prevention and control of infectious diseases (e.g., TB, HIV/AIDS, malaria), to aspects of bioterrorism and epidemic response (e.g., International Health Regulations), to infant and young child nutrition.

One of the many challenges in international health policy development is the requirement to cover a wide range of complex scientific and technical areas. This challenge brings together a diverse group of as many as 30 to 40 experts from across HHS and other USG agencies. These individuals may approach a given health issue with different viewpoints, but collectively must find consensus in order to develop a comprehensive USG policy position. To gather and craft the responses involves a dynamic, coalition-building process across HHS and sister agencies. These policy positions must then be integrated within the wider range of important elements: policy, public health import, scientific merit, and public health research. Finally, these positions must be cleared and receive proper approvals within the USG. The process produces a result that, while detailed and complex, also must be capable of being effectively communicated to high-level decision makers of developing and developed countries. The most recent WHO/EB meeting occurred in Geneva, Switzerland, in Jan. 2005.

Dr. Scott McNabb of DTBE'S Surveillance, Epidemiology, and Outbreak Investigations Branch is one of five CDC staff in the 26-member 2004 Health and Human Services (HHS) Senior Executive Service (SES) Candidate Development Program (CDP) (see photo below). Program participants were competitively chosen from among 325 applicants across all HHS agencies. As one element of his 18-month executive formation, Scott performed two rotations.

The first occurred under the mentorship of Ms. Mary Lou Valdez from December 2004 through March 2005 in Washington, DC, in the Office of Global Health Affairs, Office of the Secretary, HHS. It was during this rotation that

Scott led the effort to gather, craft, and clear the varied public health positions for the USG delegation to the WHO/EB (headed by Dr. William Steiger). His second rotation, occurring May through June 2005, is in the Office of Strategy and Innovation (OSI), Office of the Director, CDC, under the mentorships of Drs. Janet Collins and Brad Perkins. Through the various elements of the SES CDP such as briefings on departmental priorities and initiatives and two executive-level departmental

assignments, candidates gain high-level skills that can be applied to the accomplishment of program goals.

While the SES candidates are the primary beneficiaries of this program, the SES CDP is also beneficial to the participants' agencies; thus CDC and DTBE will undoubtedly gain from Scott's experience.

—Submitted by Scott McNabb, PhD, MS
Div of TB Elimination

NEW CDC PUBLICATIONS

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PERSONNEL NOTES

Robert Bailey, MPH, a member of the Epidemiology Team of DTBE's Surveillance, Epidemiology, and Outbreak Investigations Branch has accepted a position in the Division of HIV/AIDS Prevention/NCHSTP as Project officer for the Business and Labor Response to AIDS Program (BRTA/LRTA) and the National

HIV/AIDS Partnership - Intervention Research Support, Prevention Partnerships, Office of the Director. In the year that he has been with DTBE, Robert has been very ably assisting with project management activities in connection with the TB Epidemiology Studies Consortium.

Tracina Cropper has been selected for the Senior Public Health Advisor position at the Michigan Department of Community Health in Lansing, Michigan. Tracina began her career in public health on September 23, 1991, when she joined CDC as a public health associate with the Division of Sexually Transmitted Diseases (STD) and was assigned to the STD Disease Intervention Specialist training center in Decatur, Georgia. In October 1992, she was assigned to the Philadelphia STD program as a public health advisor disease intervention specialist. Tracina's interest in TB control led her to leave CDC in February 1998 and join the City of Philadelphia TB control program as a Disease Surveillance Investigator/Team Leader. Tracina returned to CDC/DTBE on December 17, 2001, as the Preventive Therapy Coordinator for the City of Philadelphia TB Control program. In February 2003, Tracina participated in a TDY in Seattle, WA, to assist in a TB outbreak among the homeless. In July and August of the same year, she was temporarily detailed to the State TB Program in Harrisburg, PA. On October 6, 2003, she was assigned to the Austin/Travis County Health Department, where she served as the Assistant to the Senior Public Health Advisor, and as a Program Manager in the Communicable Disease Unit at Austin/Travis County Health Department. Tracina began her new assignment in Michigan on May 3, 2005.

Anupa Deshpande, MPH, has been selected as an ASPH/CDC/ATSDR summer intern to work with DTBE on program evaluation. Anupa holds a BA degree from Emory University with a double major in sociology and Spanish. She recently completed her MPH from the University of North Carolina, Chapel Hill, emphasizing Global Health and International Maternal and Child Health. Before starting her MPH program, Anupa worked at the American Lung Association of Washington managing TB and asthma awareness programs. She then moved to San Francisco to work as a professional bilingual Wish Grantor at the Greater Bay Area Make-A-Wish Foundation. An Atlanta native, Anupa is delighted to be near her family for the summer. She looks forward to becoming reacquainted with the city but plans to visit the north Georgia mountains frequently.

Heather Duncan was selected as a new Program Consultant at headquarters effective May 29, 2005. Heather started with CDC in September 1991 in the STD program in Long Beach, California, as a Public Health Associate. She then transferred to New York City in January 1993 to work with the Bureau of Tuberculosis Control. During that assignment, Heather had three distinct assignments as a field PHA, front-line supervisor, and clinic manager. Leaving NYC, she transferred to Chicago in 1997 as a special projects coordinator for the Chicago Department of Public Health, TB Control Program. January 1999 took her to the warmer weather of Tallahassee, Florida, as the Senior Public Health Advisor for the Bureau of TB and Refugee Health. Heather provided technical assistance and consultation to 67 county health department TB programs; supervised the training and education section; supervised TB federal assignees; and developed, implemented and evaluated statewide TB policies and guidelines and the cooperative agreement. Beginning in 2003, she served as the Deputy Chief for the Bureau of TB and Refugee Health.

Dave Elmore of the Information Technology and Statistics Branch (ITSB) has retired effective June 3, 2005, after more than 35 years of government service (22 in the military and 14 at CDC). Dave served in the U.S. Air Force for 22 years. He then worked as a computer scientist contractor for the Automated Sciences Group (located in Dayton, Ohio, and Albany, Georgia) before joining CDC on August 1, 1991, as a senior systems analyst in the Management

Information Systems Branch of the Information Resource Management Office. Dave came to DTBE/ITSB on September 9, 2001, as the Technical Lead for TIMS, a function which over the years broadened into the Lead Information Technologist for the TIMS & NEDSS TB Program Area Module (PAM). He has made significant contributions to the adaptation of the NEDSS standards in the transition from TIMS to the forthcoming NEDSS TB PAM. Dave holds a BS degree and an MSPM (Master of Science in Personnel Management) degree from Troy State University and also was accredited as a Certified Computer Professional by the International Association of Computer Professionals. We wish him luck as he moves into the next stage of his life, which includes building his retirement home, and we appreciate his contributions in support of our mission.

Patrick Moonan, PhD, MPH, will be joining DTBE's Surveillance, Epidemiology, and Outbreak Investigations Branch as an Epidemiologist on the Outbreak Investigations Team. Patrick is not new to TB and has been working in TB control since 1999. He was recently the program coordinator and research epidemiologist at the University of North Texas Health Sciences Center with Dr. Steve Weis and worked with the DTBE Tuberculosis Epidemiologic Studies Consortium. He also worked as an epidemiologist in the Division of Tuberculosis Elimination, Tarrant County Public Health Department. Patrick has a wide range of experience in TB, including working on various TB research projects such as Quantiferon studies, the National TB Genotyping and Surveillance Network, and the utility of GIS in TB control. He has also investigated TB outbreaks and has been published in peer-reviewed journals. At DTBE, Patrick will be working on the universal genotyping program and helping with efforts to detect episodes of recent TB transmission and potential TB outbreaks. He will be working closely with NTCA's genotyping workgroup and also with Dr. Jack Crawford's team in the Mycobacteriology Laboratory Branch. Patrick will also coordinate new strategies on how best to disseminate genotyping results to states. Dr. Moonan has a masters degree in public health and is completing his doctorate in public health from University of North Texas Health Sciences Center in June 2005. He also holds a BA degree with a concentration in sociology from the State University of New York at Buffalo. Patrick will be joining DTBE on August 8, 2005, and will be moving to Atlanta with his wife and two young children.

John Oeltmann, MS, ME, PhD, will be the new senior epidemiologist filling the position vacated by Dr. Idalia Gonzalez in the Outbreak Investigations Team, Surveillance, Epidemiology and Outbreak Investigations Branch, DTBE. John has been working as Epidemic Intelligence Service (EIS) Officer in the Outbreak Investigations Team and will be graduating in June before starting in his new position in early July 2005. He has a PhD in Epidemiology and a Master of Science in Health Promotion and Education from University of South Carolina. He also has Master of Education from Vanderbilt University. John loves sports and likes to canoe and ski. We are very excited and proud in having our own EIS-officer come on board as senior epidemiologist.

Mildred Perez, MPH, has been selected for the public health advisor Special Project Coordinator position in the City of St. Louis health department, Tuberculosis (TB) Program, and started this position on May 29, 2005. Transferring from the Division of Sexually transmitted Disease Program, Mildred was assigned to the Department of Health and Hospitals in New Orleans, Louisiana, where she worked for the past 12 years, since 1993. Mildred started her career in STD as a Disease Intervention Specialist (DIS) in Fort Lauderdale, Florida, in 1990. She was initially transferred to the Washington, D.C STD Program in 1991. Along with her regular DIS duties, she worked as a community liaison and was involved in different projects including the promotion of clinical

services among the Hispanic population using mass media such as radio and TV. She established a partnership with the local school board to start STD education among high school students. Last summer she participated in a national HIV project to evaluate HIV service networks and the provision of STD services within them. She traveled to North Carolina, Missouri, and Oregon one week at the time where she teamed up with other CDC employees to interview medical providers and collect data in those areas. Mildred graduated from Tulane University School of Public Health and Tropical Medicine on May 2004, where she received a Master of Public Health with a concentration in Community Health Sciences.

Cornelia White, MPH, PhD, joins DTBE's Communications, Education, and Behavioral Studies Branch as its new Behavioral Scientist. Cornelia received a BS in Psychology from Agnes Scott College, and an MPH in Behavioral Science and a PhD in Health Education and Health Promotion from the University of Alabama at Birmingham. She is currently working at CDC as a Senior Research Fellow/ Project Manager on the Community Guide to Prevention Services. In this position, Cornelia applies systematic review methodology to the study of research in the areas of STD/HIV/cervical, breast, colorectal, and skin cancer prevention. In her dissertation work, she utilized the application of behavioral theory to study adherence among low income, minority women and the relevance of the outcomes measured to public health practice. Cornelia officially started in her new position with DTBE on May 15.

CALENDAR OF EVENTS

June 28-30, 2005
2005 National TB Controllers Workshop: Can You Hear Me Now? Let's Talk TB.
Atlanta, GA
Event Coordinator: Sherry Brown
Phone: (404) 639-8989
E-mail: smh6@cdc.gov
http://www.signup4.net/Public/ap.aspx?EID=200473E

June 30-July 3, 2005
Sixth International Conference on the Pathogenesis of Mycobacterial Infections
Stockholm, Sweden
http://www.congrex.com/mycobact/

August 17-19, 2005
TB Education and Training Network (TB ETN) 5th Annual Conference
Atlanta, GA
TB Education and Training Network
http://www.cdc.gov/nchstp/tb/Tbetn/default.htm

September 15-16, 2005
The TB Cohort Review Process
The Charles P. Felton National Tuberculosis Center at Harlem Hospital
New York City
Tel: (212) 939-8254; see attached flyer
http://www.harlemtbcenter.org/

September 21-24, 2005
45th Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC)
New Orleans, Louisiana
http://www.icaac.org/45ICAAC/45icaac.asp

September 25-29, 2005
23rd IUATLD Eastern Region Conference
Pakistan Antituberculosis Association
http://www.iuatld.org/full_picture/en/frameset/frameset_ns6.phtml?page=../conf_courses/conferences/liste_conferences.phtml

October 6-9, 2005
43rd Annual Meeting of the Infectious Diseases Society of America (IDSA)
San Francisco, CA
http://www.idsociety.org/

October 18-22, 2005
36th Union World Conference on Lung Health
Paris, France

International Union against Tuberculosis and Lung Disease
Deadline for early registration: July 20, 2005
http://www.worldlunghealth.org/Conf2005/index.php

October 24-28, 2005
2005 Program Managers Course
Atlanta, GA
CDC/DTBE
Participants are nominated by the DTBE program consultant for their area. Please contact your consultant if interested in attending.

October 27-28, 2005
11th Annual Four Corners TB & HIV Conference
Durango, Colorado
For additional information: Gayle Schack, RN
Phone: (303) 692-2635
E-mail: gayle.schack@state.co.us

October 29-November 3, 2005
Chest 2005
Montreal, CANADA
http://www.chestnet.org/

April 19-21, 2006
TB Vaccines for the World – TBV 2006
Vienna, AUSTRIA
http://www.meetingsmanagement.com/tbv_2006/index.htm